

# Climate and Oceanographic Summary for the Great Australian Bight No. 19

Kirsten Rough – 1<sup>st</sup> March 2013

This is the nineteenth update of sea surface temperature, ocean currents and chlorophyll distribution. If anyone has any questions or further suggestions please call or email.

## Summary:

Sea Surface Temperature (SST) throughout the historic and current fishing areas is generally between 20 to 22°C; all areas of the GAB and below KI to the Victorian border are within the preferred temperature range for our size SBT<sup>1</sup>.

Temperature this week in the central western GAB at 131°E 33°S is 21.6°C and temperature in the central east at 133°E 34°S is 21.1°C. Upwelling continues to moderate temperature in the eastern GAB and a warm water band along the shelf break continues below Kangaroo Island and to the SA - Victoria border.

The Leeuwin current continues to show a relatively 'normal' progression along the WA coastline. Actual SST out from Exmouth is 30°C, passing Cape Leeuwin is around 22°C and passing Esperance is now 21.1°C.

The directions of water currents in the eastern GAB are similar to last week.

CSIRO Aerial Survey flew 2 days since the previous update. Conditions were cool and hazy on the for the day in the west, with no sightings. A total of 2195-tonnes were sighted on the warmer day in the east.

Moon Phase: the next full moon is on the 27<sup>th</sup> March. A moon calendar is included in this update.

## Sea Surface Temperature and Ocean Currents:

An update of the water temperature across southern Australia and through the fishing grounds to the 27<sup>th</sup> and 28<sup>th</sup> February 2013 can be seen in Figure 1 and Figure 2. The temperature through the GAB generally ranges between 20°C and 22°C; however coastal embayments are much warmer, up to 24°C.

Warm currents continue to extend along the shelf break to the south of Kangaroo Island and across to the southeast coast of SA. Upwelling continues to moderate the temperature along the west coast of Eyre Peninsula to 130°E (Figure 1).

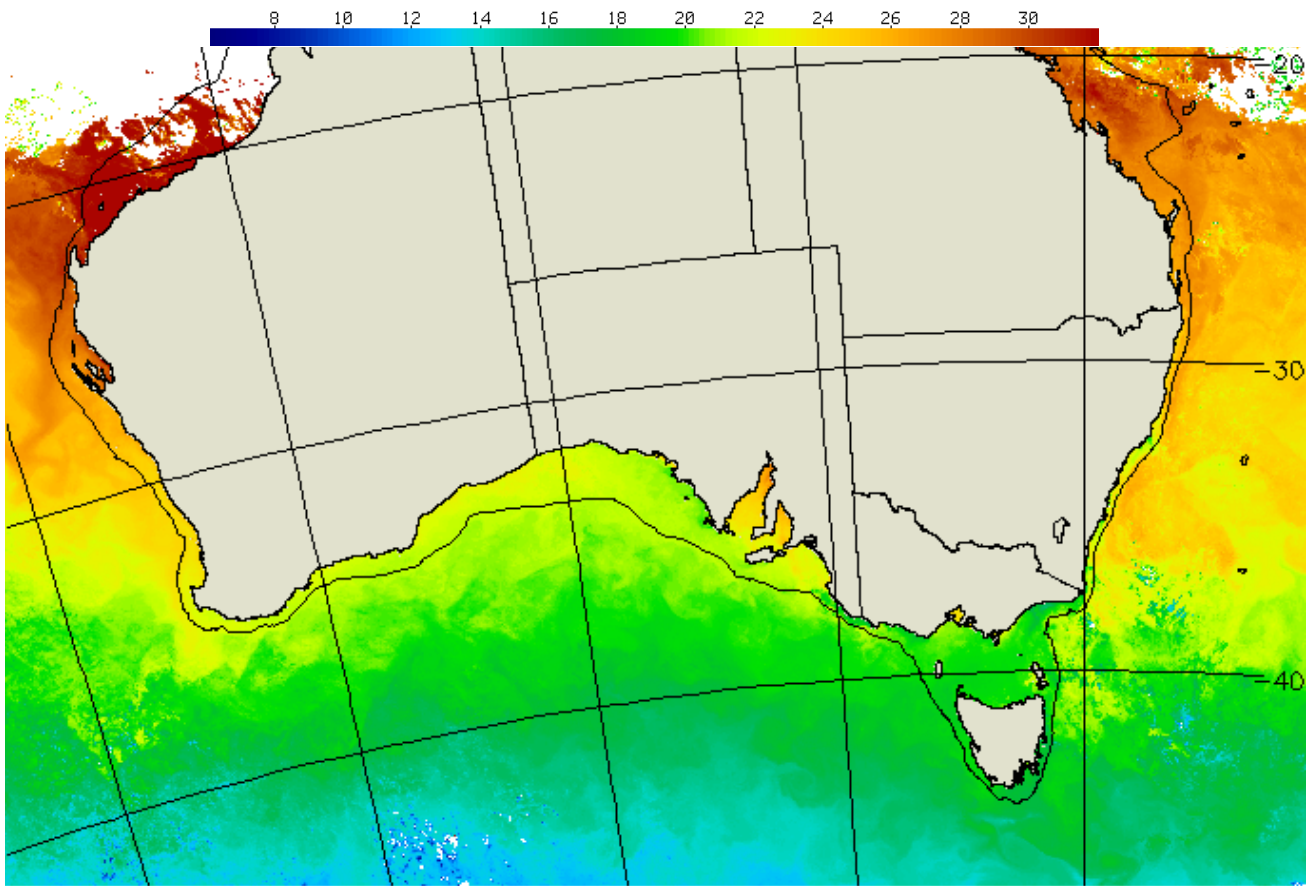
The SST at a number of specific sites averaged from 22<sup>nd</sup> to 27<sup>th</sup> February were obtained from the CSIRO (2013):

130°E 32.5°S is 21.6°C <sup>2</sup>	131°E 32°S is 21.7°C	131°E 33°S is 21.6°C	132°E 33.5°S is 21.1°C <sup>2</sup>
133°E 34°S is 21.1°C	134°E 34.5°S is 20.8°C <sup>2</sup>	135°E 35°S is 20.6°C	135.5°E 35°S is 20.8°C <sup>2</sup>

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<sup>1</sup> Basson, M., Hobday, A.J., Eveson, P., Patterson, T.A., 2012. Spatial interactions among juvenile SBT at the global scale:

<sup>2</sup> These coordinates are in Degree Decimal Minutes



Mean SST from 22/02/2013 to 27/02/2013

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Figure 1: Sea Surface Temperature around Australia for the 5 days to 27<sup>th</sup> February 2013 (source: CSIRO 2013 <http://www.marine.csiro.au>)

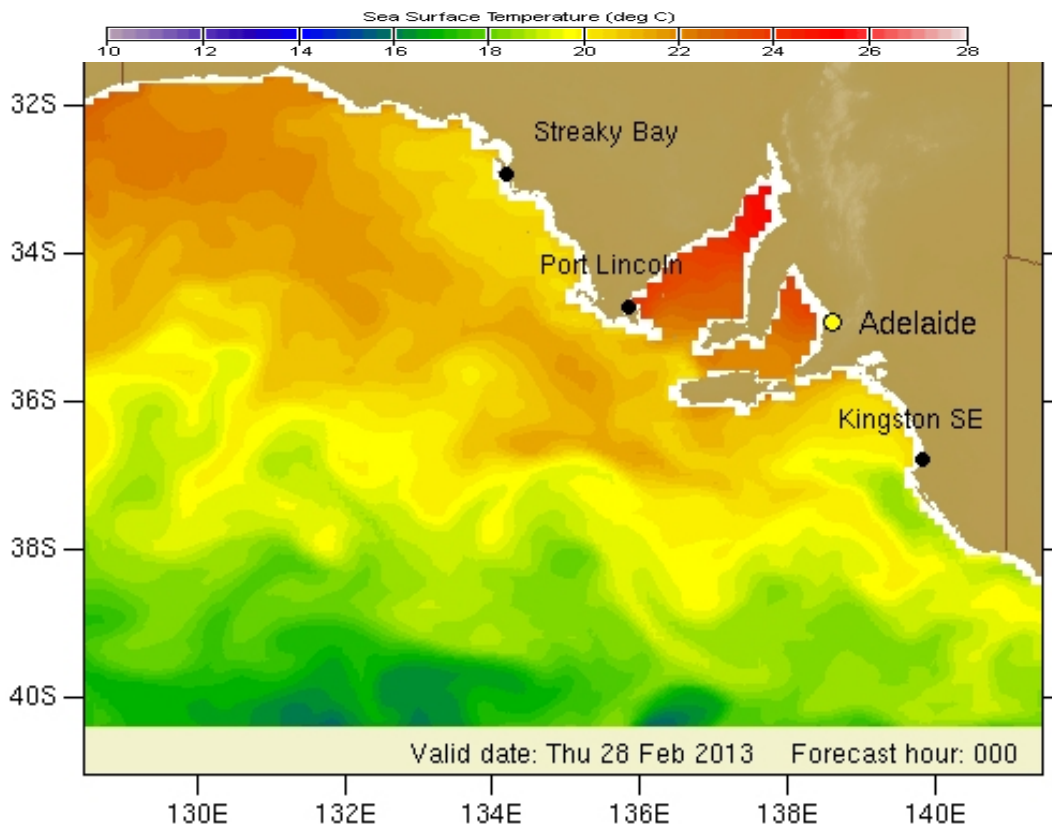


Figure 2: South Australian sea surface temperature and current direction from the Bureau of Meteorology website for the 3 days to the 28<sup>th</sup> February 2013 (source: Bureau of Meteorology 2013; <http://www.bom.gov.au>).

### Leeuwin Current:

The status of sea surface temperature patterns off WA can be seen in Figure 1 above. The actual SST off the coast of North West Cape (Exmouth) has decreased to 30.2°C, out from Cape Inscription (Shark Bay) is 27.8°C, out from Cape Leeuwin (Augusta) has dropped to 21.9°C and out from Esperance is 21.1°C (CSIRO 2013).

### GAB Currents and Port Lincoln Tides:

A general plot of where the water currents are moving within the eastern GAB area can be seen in Figure 3; the position of the orange cursor is 34°28'S 134°38'E. The area covered by the image spans from Streaky Bay to Kangaroo Island. The current directions and positions this week are very similar to those of last week. Below Eyre Peninsula on the continental shelf water is pushing from the southeast towards the northwest. These currents extend to at least 50m-depth. Along the shelf break currents are less predictable, but generally tending to the south and southwest.

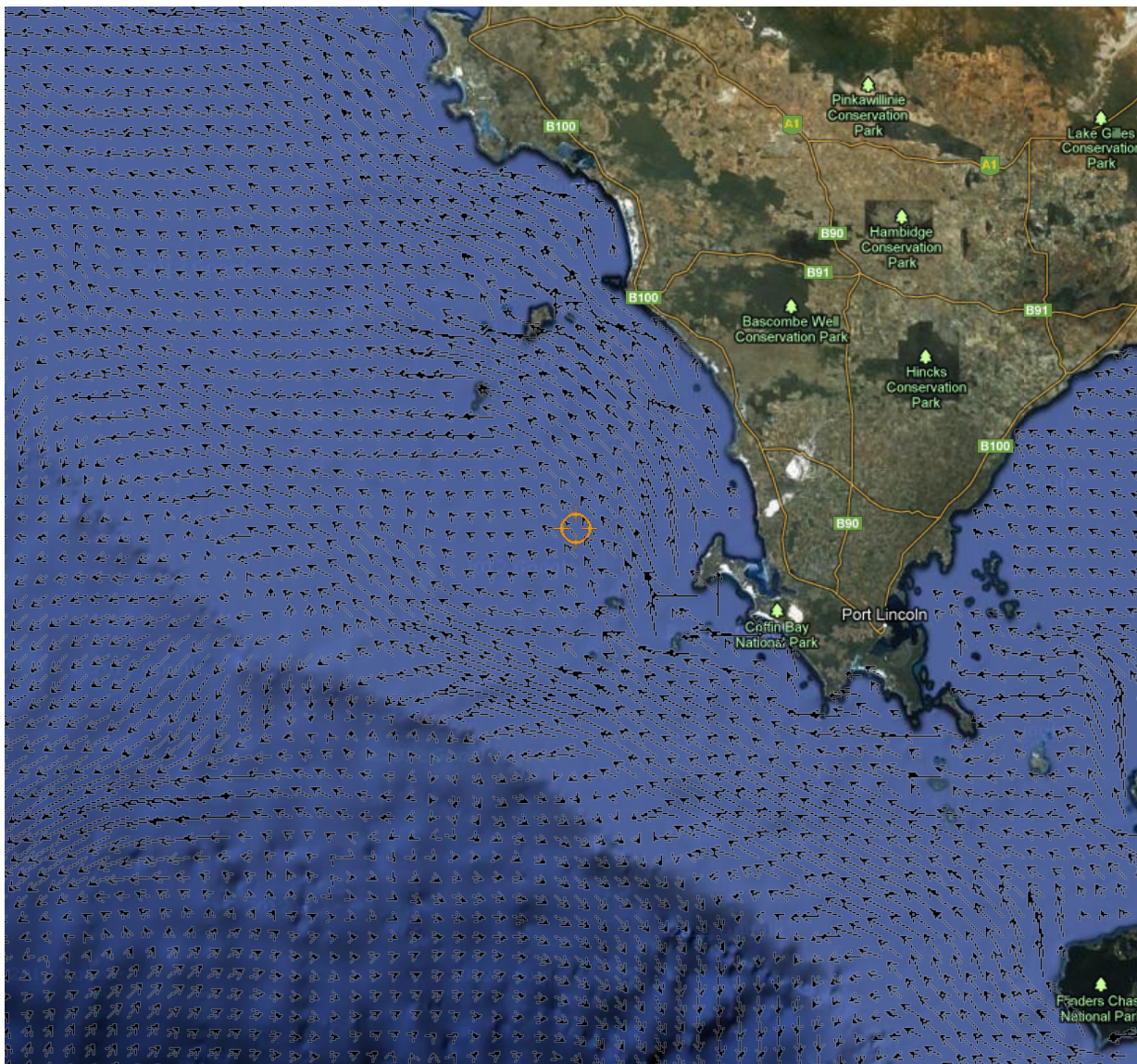


Figure 3: Direction of water movement within the eastern section of the Great Australian Bight, Streaky Bay to Kangaroo Island, on the 28<sup>th</sup> February 2013 (source: <http://www.fishtrack.com>)

Tide times for Port Lincoln for the next week can be seen in Table 1 below, note these are in Central Standard Time – therefore add 1 hour (for daylight savings). To make this more representative of the Tuna Ranching zone minus between 20-28 minutes from the time that is listed. Taylors Landing tide times are minus 20 minutes; Reevesby Island tide times are minus 28 minutes. Figure 4 shows the moon cycle for the month of March.

Table 1: Tide times for Port Lincoln for the week of 1st to 7th of March 2013

Friday 1		Saturday 2		Sunday 3		Monday 4		Tuesday 5		Wednesday 6		Thursday 7	
Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height	Time	Height
0336	1.30	0352	1.16	0405	1.01	0411	0.88	0227	0.79	0934	0.29	0843	0.31
0943	0.11	0952	0.14	0955	0.17	0957	0.20	0954	0.25	1755	1.06		
1552	1.40	1613	1.41	1635	1.39	1659	1.33	1727	1.21	1950	1.03		
2211	0.26	2239	0.37	2307	0.51	2337	0.67			2159	1.05		

[South Australian Tide Book](#) and [Dodge tide information](#)

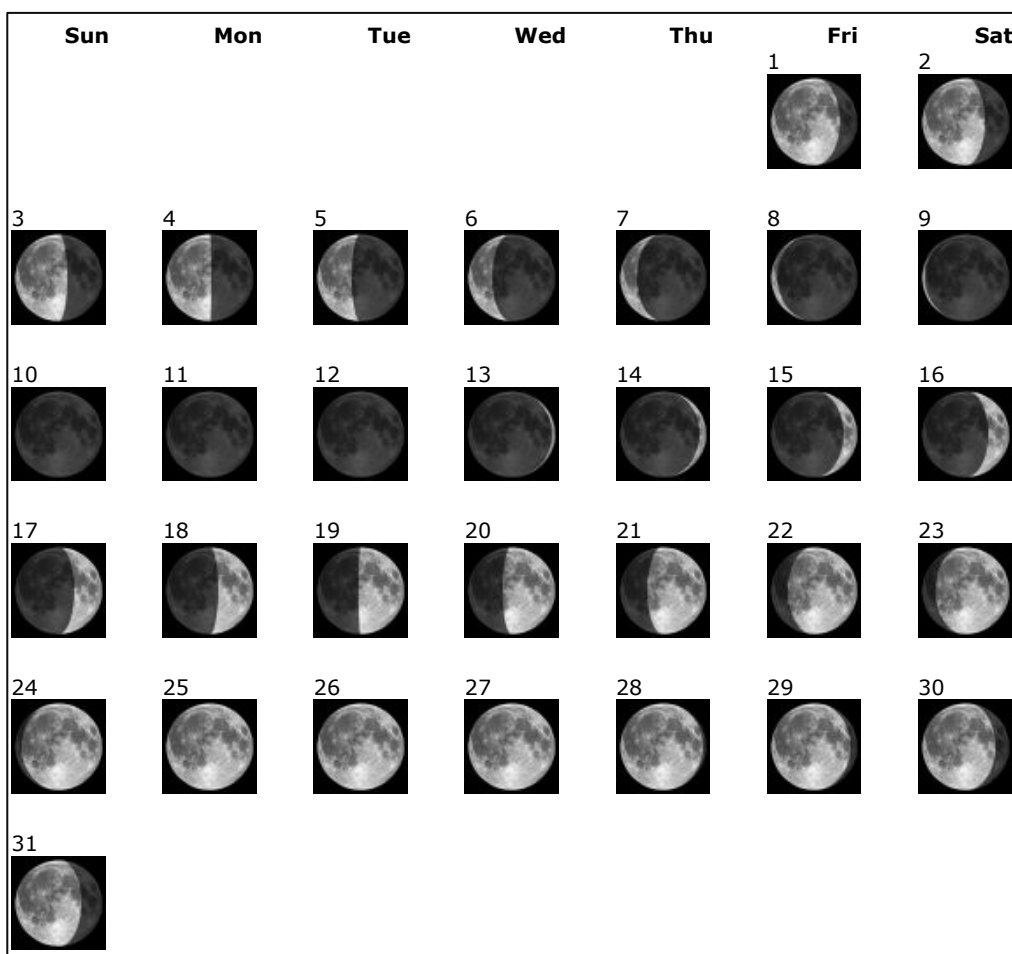


Figure 4: Moon phases for the month of March.

**Chlorophyll / Productivity:**

The amount of chlorophyll around southern Australia can be seen on the IMOS image 27<sup>th</sup> February (Figure 5). Cloud cover is an issue again for finer scale images of the eastern GAB area the clearest for the past week was on the Fishtrack site on the 23<sup>rd</sup> February (Figure 6). Both show chlorophyll concentrated in the coastal regions and denser patches within Spencers Gulf.

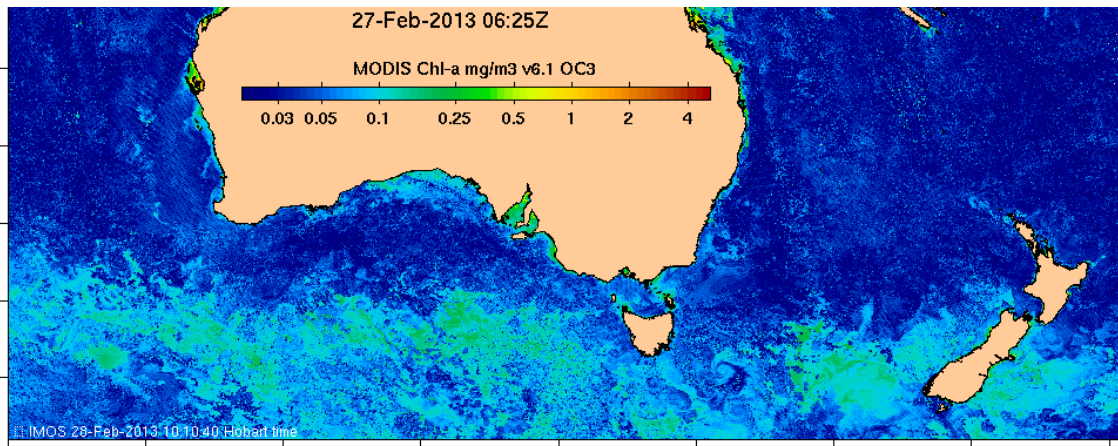


Figure 5: Productivity across southern Australia on the 27<sup>th</sup> February 2013 (IMOS 2013).

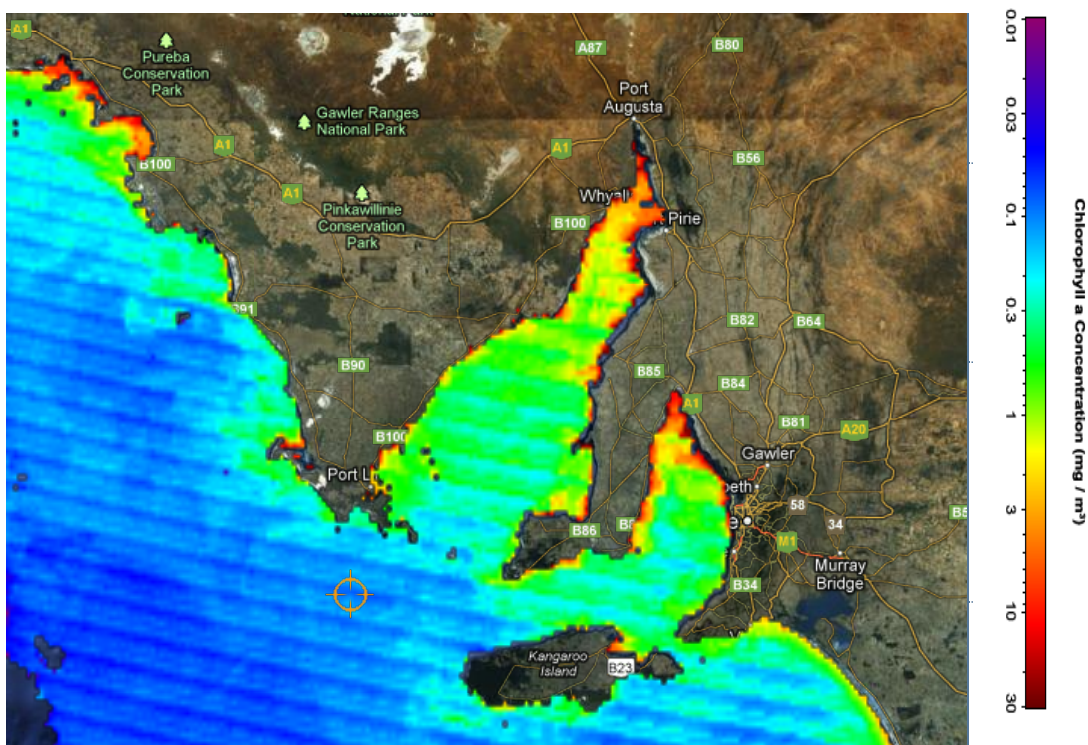


Figure 6: Areas of productivity within the eastern GAB on the 23<sup>rd</sup> February 2013 (source: <http://www.fishtrack.com>).

**CSIRO Aerial Survey:**

Summary of SBT sightings through this past week are shown by longitude in Table 2 below. Note this is only raw data, therefore not calibrated per area covered on any particular day or weather conditions AND includes SBT of all sizes.

Six full lines in the western section of the GAB were flown on the 22<sup>nd</sup> February; weather conditions were cool and hazy. Six full lines in the eastern section of the GAB were flown in warmer conditions on the 23<sup>rd</sup> February.

Table 2: Summary of CSIRO Aerial Survey raw sightings over the past week. Note that the sightings are in tonnes, and include all sizes of SBT; cells are left blank for longitudes not covered by transects flown (CSIRO 2013).

DATE	128° - 129°	129° - 130°	130° - 131°	131° - 132°	132° - 133°	133° - 134°	134° - 135°
22 <sup>nd</sup> Feb	0	0	0	0			
23 <sup>rd</sup> Feb					1645	350	200

### Climate / Ocean Trends:

The latest plot of sea surface temperature anomalies (i.e. areas where sea temperature are higher or lower than the long-term average) is shown in Figure 7. The area within the GAB is now pretty typical for this time of year, however south of the GAB and most areas adjacent to WA remain warmer than the average over the past 30 years.

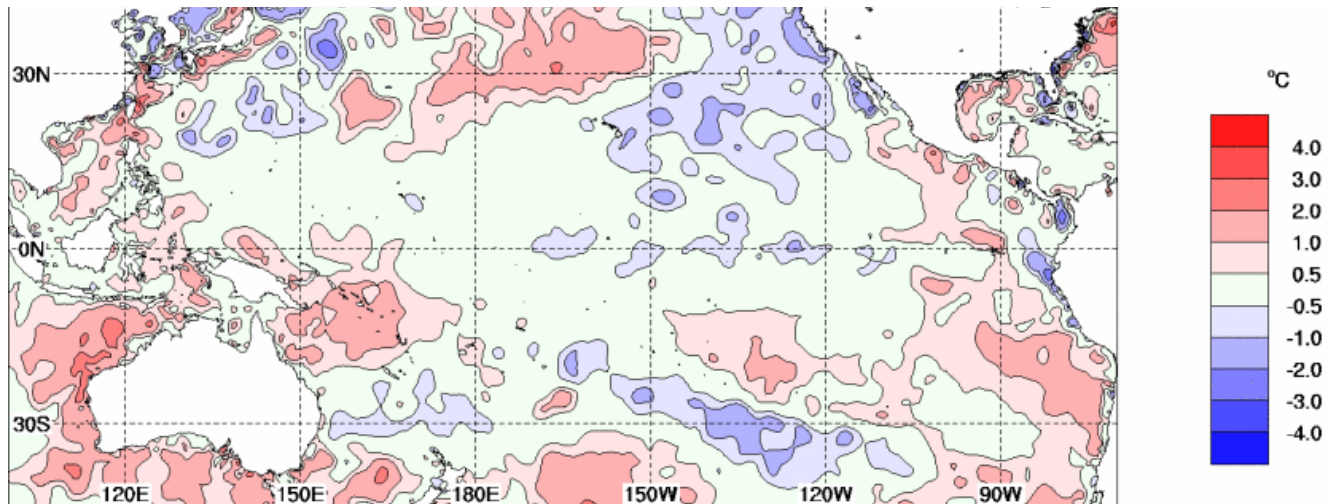


Figure 7: SST anomalies through the past 2week period (BOM 2013).

#### Useful Websites:

<http://www.bom.gov.au>

<http://www.csiro.au>

<http://www.fishtrack.com>

<http://www.oceancurrent.imos.org.au>

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